a first photodiode disposed within said housing positioned opposite and substantially normal to said laser diode light source such that substantially full strength of an unimpeded generated light beam is detected by said first photodiode;

a second photodiode disposed within said housing adjacent said first photodiode positioned such that a baseline level of an unimpeded generated light beam is detected by said second photodiode;

circuitry coupled to said first and second photodiodes to monitor the ratio of light intensities measured by said first and second photodiode to indicate the presence of particulate within an introduced fuel flow; and

a control structure inputted into said circuitry to initiate a system control based on the ratio of light intensities.

6. (once amended) An in-line particulate detector in accordance with Claim 1, wherein said control structure is inputted into said circuitry by programming into memory of an application specific integrated circuit.

7. (once amended) An in-line particulate detector in accordance with Claim 1, wherein said control structure is inputted into said circuitry by being embedded in the form of algorithms in one or more computers.

9. (once amended) An in-line particulate detector in accordance with Claim 1, wherein said control structure is programmed in a language selected from the group of C, C++, Basic, MATLAB, and FORTRAN.

15. (twice amended) An in-line particulate detector comprising:

a housing having an inner flow portion, which housing is installed in-line between adjacent portions of a pipeline in a system and is removably disposable between the adjacent portions of the pipeline to permit a fuel flow from a fuel source through said inner flow portion to a fuel consumer;

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a laser diode light source disposed within said housing for emitting a light beam within said inner flow portion;

a first photodiode disposed within said housing positioned opposite and substantially normal to said laser diode light source such that substantially full strength of an unimpeded generated light beam is detected by said first photodiode;

a second photodiode disposed within said housing adjacent said first photodiode positioned such that a baseline level of an unimpeded generated light beam is detected by said second photodiode;

circuitry coupled to said first and second photodiode to monitor the ratio of light intensities measured by said first and second photodiodes to indicate the presence of particulate within an introduced fuel flow;

a control structure inputted into said circuitry to initiate a system control based on the ratio of light intensities;

at least one remote unit for transmitting signals generated from said first and second photodiodes;

a central station; and

a communications link.

23. (once amended) An in-line particulate detector comprising:

a housing having an inner flow portion, which housing is installed in-line between adjacent portions of a pipeline in a system and is removably disposable between the adjacent portions of the pipeline to permit a fuel flow from a fuel source through said inner flow portion to a fuel consumer;

a means for emitting a light beam within said inner flow portion;

a first means for detecting substantially full strength of an unimpeded light beam generated by said means for emitting;

a second means for detecting a baseline level of unimpeded light beam generated by said means for emitting;

a means for comparing the light intensities detected by said first and second means for detecting, to determine the presence of particulate within an introduced flow; and

a control means for receiving from said comparing means a signal to initiate a system control based on the ratio of light intensities.

37. (twice amended) An in-line particulate detector comprising:

a housing having an inner flow portion; which housing is installed in-line between adjacent portions of a pipeline in a system and is removably disposable between the adjacent portions of the pipeline to permit a fuel flow from a fuel source through said inner flow portion to a fuel consumer;

a Laser diode light source disposed within said housing for emitting a light beam within said inner flow portion;

a first photodiode disposed within said housing positioned opposite and substantially normal to said laser diode light source such that substantially full strength of an unimpeded generated light beam is detected by said first photodiode;

a second photodiode disposed within said housing adjacent said first photodiode positioned such that a baseline level of an unimpeded generated light beam is detected by said second photodiode;

circuitry coupled to said first and second photodiode to monitor the ratio of light intensities measured by said first and second photodiodes to indicate the presence of particulate within an introduced flow; and

a control structure inputted into said circuitry to initiate a system control based on the ratio of light intensities.

38. (twice amended) An in-line particulate detector for insertion within a pipeline, said detector comprising:

a laser diode light source to be disposed within said pipeline for emitting a light beam within an inner flow portion of said pipeline;

a first photodiode to be disposed within said pipeline positioned opposite and substantially normal to said laser diode light source such that substantially full strength of an unimpeded generated light beam is detected by said first photodiode;

a second photodiode to be disposed within said pipeline adjacent said first photodiode positioned such that a baseline level of unimpeded generated light beam is detected by said second photodiode;

circuitry coupled to said first and second photodiode to monitor the ratio of light intensities measured by said first and second photodiodes to indicate the presence of particulate within an introduced flow; and

a control structure inputted into said circuitry to initiate a system control based on the ratio of light intensities.

Remarks

Claims 1-9, 15-31, 37 and 38 are pending in this application. Claims 1-9, 15-31, 37 and 38 stand rejected. Claim 5 has been cancelled.

The rejection of Claims 1-4, 23-26, 37 and 38 under 35 U.S.C. § 103(a) as being unpatentable over Conklin et al. (U.S. Patent 3,358,148) is respectfully traversed.

Conklin et al. describe a haze measuring apparatus that includes a light source (1) rigidly mounted in a metal block (4), and an orifice (5) that allows light to pass from the source to